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Analysis of the persistence and normal spacing of discontinuities via 3D point clouds: a practical discussion

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The continuous improvement of the remote sensing techniques is having a considerable impact on the characterization and monitoring of rock slopes. Rock slope characterization can be conducted by analysing the coordinates of the points or the mesh derived from point clouds. Previous works on rock slope characterization using 3D point clouds have focused on extracting both the number and the orientation of discontinuity sets, together with the development of different techniques for point cloud segmentation into different discontinuity planes. As different planes of a discontinuity set are available after the previous process, normal spacing and persistence can also be calculated. Although different conceptual and computational strategies can be adopted for computing normal spacing and persistence, this process is not always straightforward. In this communication we enumerate the different approaches for extracting the spacing and persistence of discontinuities, describe their fundamentals and discuss how the classification process of 3D point clouds in discontinuity sets and planes can affect the estimation of normal spacing and persistence of rock slopes.